



BUREAU
VERITAS

SHAPING A BETTER MARITIME WORLD

BUREAU VERITAS MARINE & OFFSHORE
SERVICES FOR FLOATING ENERGIES

JUNE 2023

BIENVENUE
ALOHA BON BINI SALVE
WELCOME TOUR ALTO
WOEZOR MAEVA BIENVENIDA
WOLKOM



00.

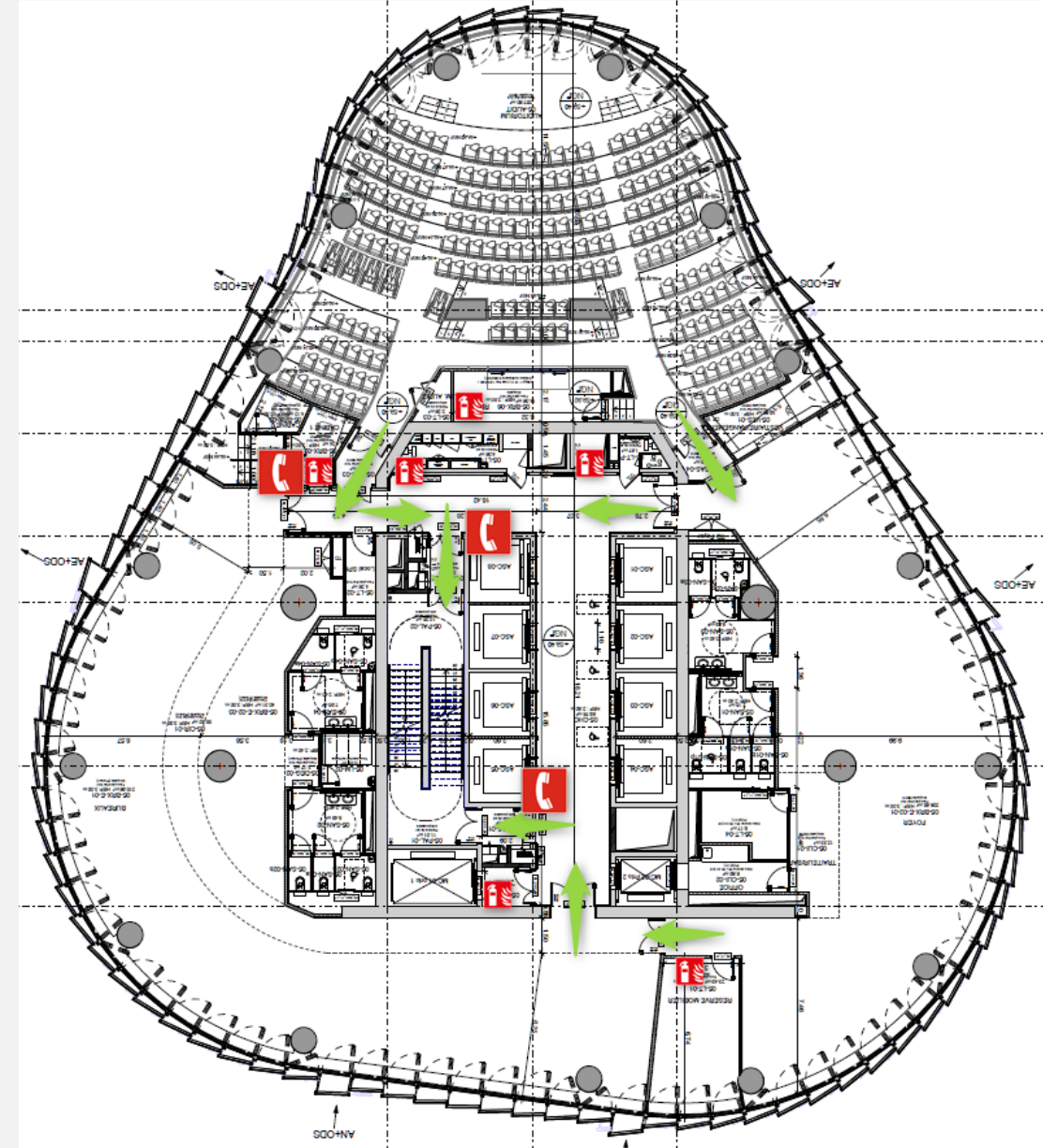
SAFETY MINUTE

DISCOVER →

IN CASE OF EMERGENCY

| Emergency numbers

- Fire department 18
- Police department 17
- Ambulance service 15
- Building security office 01 40 90 21 02



A wide-angle photograph of an offshore wind farm. Several white wind turbines are spaced out across a deep blue sea. In the background, a city skyline is visible on the horizon under a sky filled with large, white, puffy clouds. The image is presented in a multi-panel format, with vertical lines separating different sections of the scene.

01.

DISCOVER →


BUREAU VERITAS GROUP

CONTRIBUTING TO TRANSFORM THE WORLD

we live in with leadership positions in major industries



MARINE &
OFFSHORE



INDUSTRY



BUILDING &
INFRASTRUCTURE



CERTIFICATION



AGRI-FOOD &
COMMODITIES



CONSUMER
PRODUCTS

BUREAU VERITAS MISSION SHAPE A WORLD OF TRUST

We help our clients innovate to **meet challenges**
in quality, health & safety, environmental protection and social responsibility.

As a Business to Business to Society company,
we are dedicated to **building trust** between client companies, public authorities and consumers.

THE LARGEST TIC BODY INVOLVED

IN MARINE CLASSIFICATION

€5.7

BILLION
revenue in 2022

+82,000

EMPLOYEES

400,000

CLIENTS

~1,600

OFFICES
& LABORATORIES
in 140 countries



02.

BUREAU VERITAS
MARINE & OFFSHORE

DISCOVER →

195 YEARS OF INNOVATION

STARTED WITH SHIPPING



1828 origins in shipping

Bureau Veritas is founded
as a maritime assurance
group

Early 20th century

New inspection activities support growth
of automotive and rail industries and safety
in **ship construction materials**

1990s

Emergence of offshore wind
the first offshore wind farm was built in 1991



2020s energy transition

Digitally-enabled TIC services
and classification expertise
support growth in renewables
and decarbonization

19th century

Classification of vessels, including
the world's first oil tanker supports international
commerce

1960s

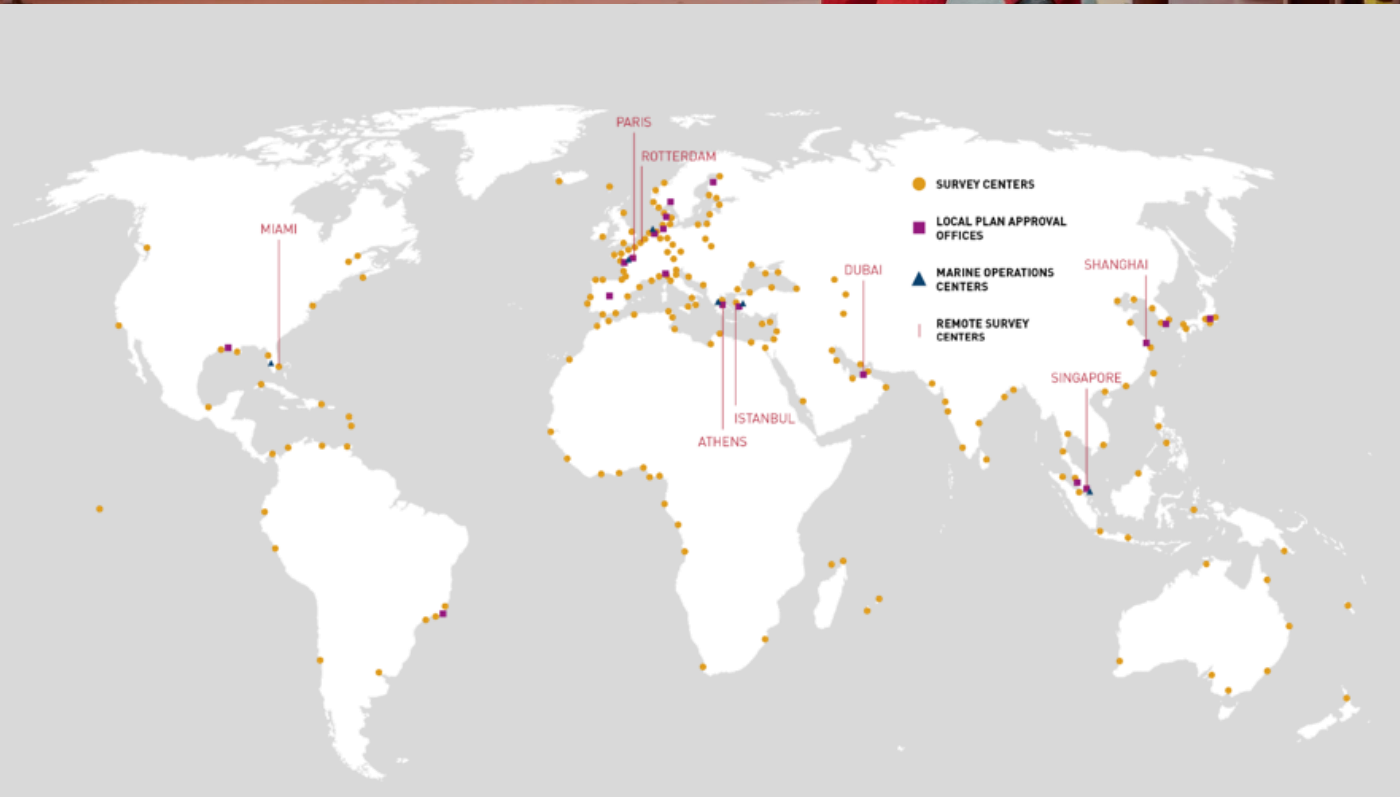
Active role in promoting construction safety
and energy efficiency and in **modernizing ship
building standards**. Classification of world's
first LNG carrier

2010s

Acquisitions create a global commodities
business and enable marine fuel
and cargo testing; investment
in digitalization enabling **advanced ship
modeling and 3D classification**



GLOBAL EXPERTISE WITH EXPERIENCE



2,900

M&O EXPERTS

180

SURVEY CENTERS

19

LOCAL PLAN APPROVAL
OFFICES

6

MARINE OPERATIONS
CENTERS

8

REMOTE SURVEY
CENTERS

SHAPING TRUST IN GLOBAL MARITIME

AND ENERGY INDUSTRIES



A leader in ship classification

Our surveyors are on-hand in major ports worldwide to ensure the safety and compliance of all types of vessel and offshore structure.



Partnering offshore energy projects

We support the world's major energy operators with classification of innovative designs and verification of offshore structures and equipment.



Beyond compliance

Our technical advisory and engineering consultancy services respond to all marine and offshore energy challenges. Its core activities cover engineering & technical advisory, asset management and assurance solutions.

WE SUPPORT THE ENTIRE PROJECT LIFE

- | Qualification of new technologies
- | Approval in Principle
- | CLASSIFICATION > Design Review (FEED or EPC)
- | CLASSIFICATION > Construction survey, Equipment certification
- | CLASSIFICATION > Offshore installation & commissioning surveys
- | STATUTORY certification
- | Independent Verification Body and Certification
- | Marine Warranty Survey, & Loss adjustment

- | Shop Inspection, Construction Verification & Tests Witnessing
- | QA QC surveys, audits
- | Independent analyses: Risk, Hydrodynamics, Mooring, Structure strength & fatigue ...

PROJECT PHASE

- | CLASSIFICATION > surveys in service
- | STATUTORY Surveys
- | CLASS renewal, Transfer of CLASS
- | Re-certification
- | Operational Verification (IVB)

- | Asset Integrity Management Services
- | Risk Analyses / Impact Studies in Operation
- | Expertise on Corrosion & Cathodic Protection
- | Inspection Strategy, Mitigating Strategy
- | Defect Analysis & FFS
- | Quality System & Procedures
- | Audits & Check towards Regulations

OPERATION PHASE

- | Legal compliance assurance
- | Hazardous materials mapping survey
- | Financial and technical risk of decommissioning options
- | Dismantlement safety case
- | Decommissioning risk register
- | Recyclable material mapping

DESIGN
APPRAISAL

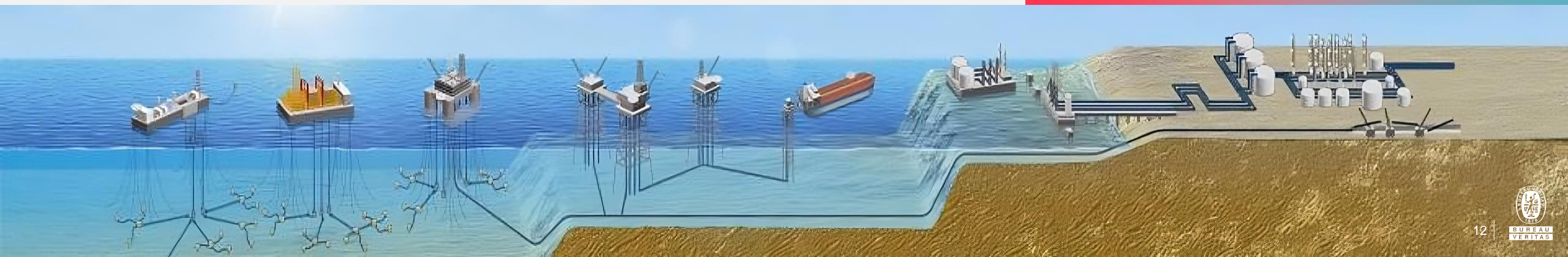
PROCUREMENT

CONSTRUCTION
(CONVERSION))

INTEGRATION,
COMMISSIONING,
INSTALLATION

OPERATION

DECOMMISSIONING



RULES (*) – 2023 DEVELOPMENT PLAN

STEEL SHIPS

- | **Edition January 2023**
- | **Edition July 2023**
- | **HSC Rules**

OFFSHORE

- | **Carbone Capture and Storage**
- | **FPSO Sustainability**
- | **Rules for Offshore Fish Farms**
- | **Floating Power Plant**
- | **Notation liquefaction, storage of CO2**

SUSTAINABLE SHIPPING

- | **Ammonia bunkering ship**
- | **Methanol bunkering ship**
- | **Hydrogen fuelled ship**
Hydrogen prepared
- | **On-Board Carbon capture**
- | **On-board Carbon Capture prepared**
- | **Revision NR206 Wind propulsion**
- | **Notation CPS(MFT) for methanol tanks**

RENEWABLE ENERGY

- | **NI 685 Verification scheme for dynamic subsea power cable**
- | **Revised NI 631 about certification of MRE**
- | **Revised NI 432 to include new fibre materials**
- | **NI Floating Offshore Wind Turbine – Coupled Calculations**
- | **Rules for the classification of Marine Renewable Energy Units including Wind farm**

SMART SHIP

- | **NR 675 Additional Class Notation SMART**
- | **NR 674 Predictive CMS**
- | **Data infrastructure**
- | **CII Real Time**
- | **Data Quality**
- | **Notation L for electronic logbooks**
- | **Notation SYNC-COM and SYNC-COM-R**

NAVAL SHIPS

- | **European Patrol Corvette project EPC (with RINA)**
- | **Aircraft Carrier and all naval ships structural rules review (idem Steel Ships)**

(*) More than 140 Rules & Guidelines available at:
<https://marine-offshore.bureauveritas.com/rule-notes-and-guidance-notes>



Published in 2023

To be published in 2023

To be started in 2023

On-going in 2023

TECHNICAL EXPERTISE

SUPPORTED BY R&D TEAMS

| RULES & GUIDELINES

Classification / certification of Floating wind Turbines

Classification of Wind Farm Service Ships

Participation to standardization committees (IEC-TC88+TC114*, AFNOR, ISO)

(*) French mirror committee chaired by BV

| IN-HOUSE SCIENTIFIC TOOLS

Hydrostar: Hydrodynamic code

Opera: Time domain mechanical solver including wind turbine capabilities

Homer: Fluid-structure interaction software linked with Opera simulations for FOWT applications

| O&M INSPECTION STRATEGY

Digital Platform/Twin

Risk-based Inspection schemes

Remote Inspection Techniques



04.

FLOATING ENERGIES RESEARCH FORUM - AGENDA

DISCOVER →

AGENDA

08.30 am	Reception of guests		
9.00 am	Opening Forum		BV M&O & MARIN
9.20 am	Offshore Wind development and challenge	G. De-Saivre	TotalEnergies
9.40 am	Adapting Fixed Offshore Wind or Oil and Gas design rules to Floating Offshore Wind: a complex challenge	Q. Derbanne	BV M&O
10.00 am	Floating Offshore Wind....Integrity or Reliability..what really matters?	D. Constantinis	EM&I
10.20 am	Panel discussion		
10.40 am	Break		
11.00 am	AFFIDA project: Structural health for FOWT, from O&G experience to validation on the Provence Grand Large pilot farm	A. Sandor	Principia
11.20 am	On the fatigue assessment of large floating wind turbines	F. Rezende	Principle Power
11.40 am	The importance of the turbine model on coupled analyses and overall FOWT design	G. Bonnafoux	SBM
12.00 pm	The floating wind pilot farm of Provence Grand Large as a crucial step for commercial tenders	E. Duranteau	EDF Renouvelables
12.20 pm	Panel discussion		
12.40 pm	Lunch		
13.40 pm	Development process for life extension of ageing FPSO	K. Pidery	TotalEnergies
14.00 pm	FPSO decarbonation	F. Fourier	SBM
14.20 pm	Eemshaven FSRU terminal fast track project to secure European gas consumption	F. van Luffel	Exmar
14.40 pm	Panel Discussion		
15.00 pm	Break		
15.20 pm	Panel discussion on bankability and insurability of floating wind projects		NHC / Green Giraffe
15.40 pm	JIP pitches and announcement of next FER week	O. Waals	MARIN
17.00 pm	Closure		

TEAM PICTURE

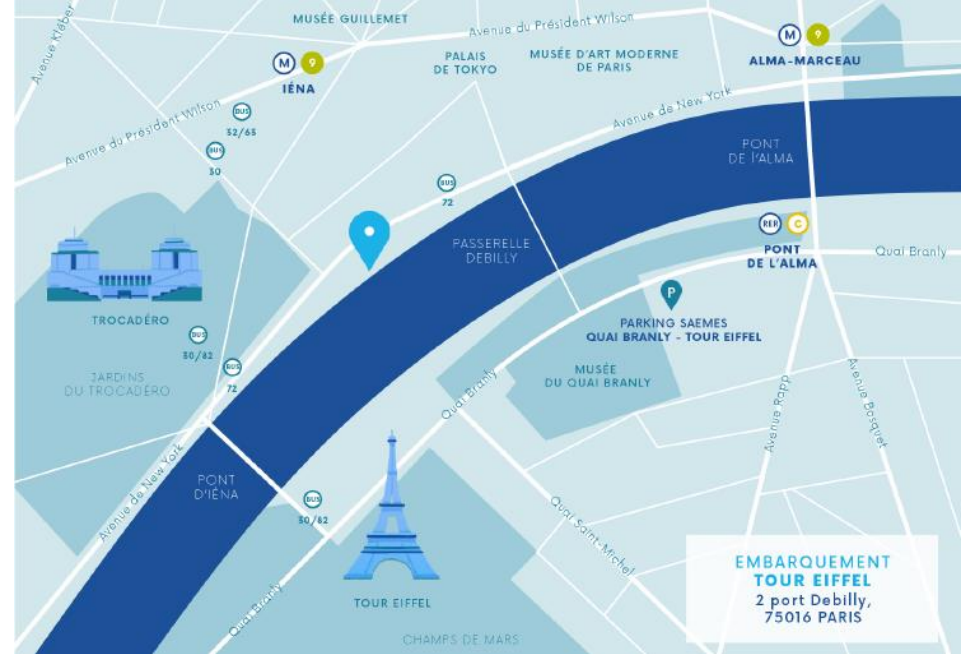
Let's meet at 5.00pm

- | Where: in front of the tower
- | Who: all participants

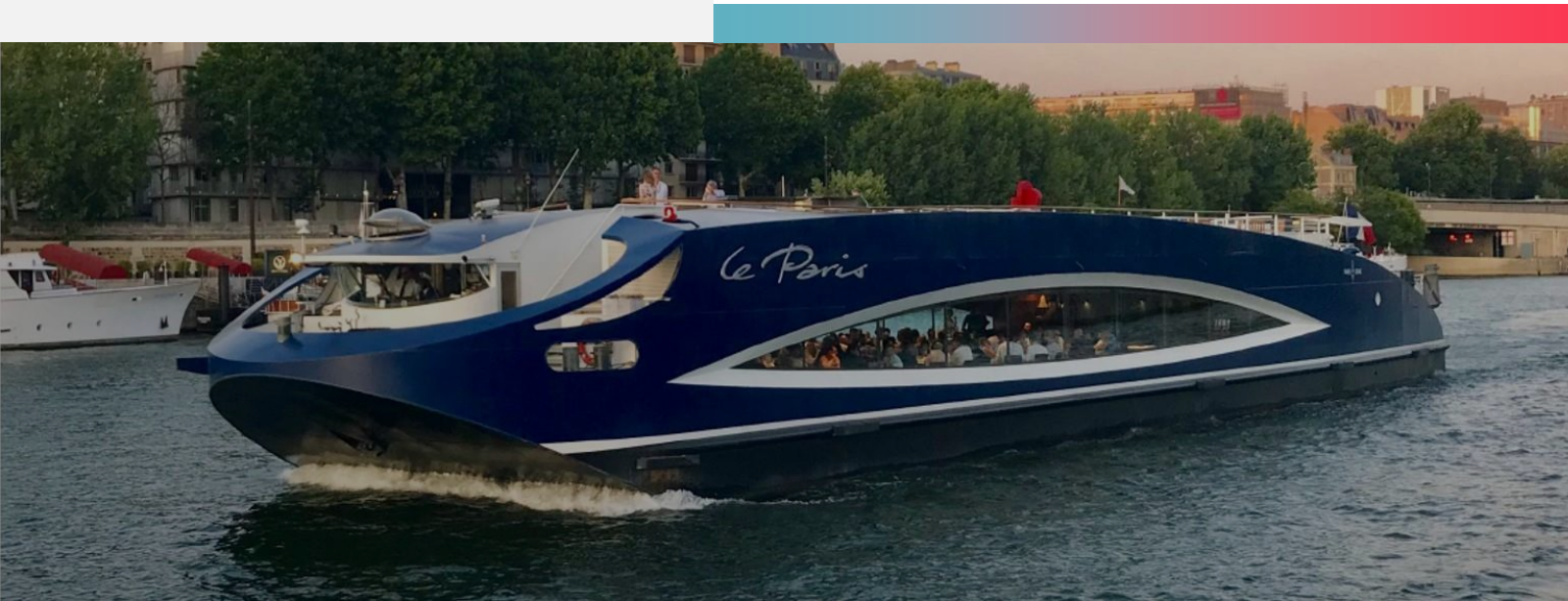


DINNER

- | Coaches departure from Novotel: 6.00 pm
- | Guest reception from 7.00pm to 7.30pm
- | **Boat departure: 7.30pm**
- | Boat return to quay: 10pm



Delphine RIGAUD





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OF TRUST

